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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:)
)
Ameritech Corporation Telephone Operating)
Companies' Continuing Property Records Audit)
)
Bell Atlantic (North) Telephone Companies')
Continuing Property Records Audit)
)
Bell Atlantic (South) Telephone Companies')
Continuing Property Records Audit)
)
BellSouth Telecommunications' Continuing)
Property Records Audit)
)
Pacific Bell and Nevada Bell Telephone)
Companies' Continuing Property Records Audit)
)
Southwestern Bell Telephone Company's)
Continuing Property Records Audit)
)
US WEST Telephone Companies' Continuing)
Property Records Audit)

CC Docket No. 99-117

ASD File No. 99-22

**COMMENTS
OF THE
UNITED STATES TELEPHONE ASSOCIATION**

The United States Telephone Association (USTA) respectfully submits its comments in the above-referenced proceeding. USTA is the principal trade association of the local exchange carrier (LEC) industry. Its members provide over 95 percent of the incumbent LEC-provided access lines in the U.S. The captioned companies are members of USTA.

On April 7, 1999, the Commission released a Notice of Inquiry on issues arising from audit reports of the companies' hard-wired central office equipment conducted by the Common Carrier Bureau. These issues relate to deficiencies in the audit procedures and findings and the

relevance of these audits in a pro-competitive, de-regulatory national policy framework. In its comments, and in the supporting affidavit appended hereto, USTA addresses Issue 8.

In Issue 8, the Commission asks the following:

What ratepayer impact, if any, the alleged discrepancies in the CPR may have had, e.g., through the derivation of the Commission's price cap rates, including re-initialization of price caps, sharing, lower formula adjustments, exogenous cost calculations, and changes to or setting of the productivity factors, joint cost allocations, separations, access charges, and ultimately, ratemaking.

Under current price cap regulations, changes in a regulated company's accounting costs have no impact on prices or productivity growth. CPR and accounting costs are inconsequential to setting prices under price cap regulation and, thus, do not have an impact on the prices that consumers pay.

This basic conclusion is supported in the attached affidavit prepared by Dr. William E. Taylor, Senior Vice President of the National Economic Research Associates, Inc. As Dr. Taylor explains, under price cap regulation, annual changes in regulated prices are determined by a formula that is independent of accounting costs. Price cap regulation effectively severs the link between regulated costs and prices so that any changes in accounting costs associated with correcting alleged discrepancies in the CPRs would have no direct impact on prices.


Dr. Taylor also notes that even with the vestiges of rate of return regulation which remain a part of the Commission's price cap plan, there is still no indirect link between alleged CPR discrepancies and prices. Rates under traditional rate of return regulation were based on regulated accounting costs compiled in the company's Uniform System of Accounts (USOA), not on the CPR. The CPR audit conducted by the Bureau has no bearing on the accuracy of the companies' USOA booked investment and no corroborating testing of the data, methods or internal controls of the companies' financial books was performed. Even assuming, *arguendo*,

that the audit conclusions were true and corrections in the CPR were required, retiring plant that has been properly entered onto the CPR but classified as missing in the audit would not result in any material changes in prices.

The Commission should bear in mind that there is a critical intervening factor that comes between price cap LEC access charges and the prices paid by customers for interstate long distance services. Interexchange carriers have the freedom to set their own rates and may choose to pass through the year over year access charge reductions they receive from price cap LECs. Considering that since 1991, interexchange carriers have received an accumulated savings of approximately \$23 billion in access costs, the direct ratepayer impact of interexchange carrier pricing decisions is enormous.

Respectfully submitted,

UNITED STATES TELEPHONE ASSOCIATION

By: _____

Its Attorneys:

Lawrence E. Sarjeant
Linda L. Kent
Keith Townsend
John W. Hunter
Julie E. Rones

1401 H Street, NW, Suite 600
Washington, D.C. 20005
(202) 326-7248

September 13, 1999

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AFFIDAVIT OF WILLIAM E. TAYLOR

ON BEHALF OF

UNITED STATES TELEPHONE ASSOCIATION

SEPTEMBER 13, 1999

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AFFIDAVIT OF WILLIAM E. TAYLOR

I. INTRODUCTION

I, William E. Taylor, being duly sworn, depose and say:

1. I am Senior Vice President of National Economic Research Associates, Inc. (NERA), head of its telecommunications economics practice and head of its Cambridge office. I received a B.A. degree in economics, magna cum laude, from Harvard College in 1968, a master's degree in statistics from the University of California at Berkeley in 1970, and a Ph.D. in Economics from Berkeley in 1974, specializing in industrial organization and econometrics. I have taught

and published research in the areas of microeconomics, theoretical and applied econometrics, and telecommunications policy at academic institutions (including the economics departments of Cornell University, the Catholic University of Louvain in Belgium, and the Massachusetts Institute of Technology) and at research organizations in the telecommunications industry (including Bell Laboratories and Bell Communications Research, Inc.). My research has appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic Review*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, *The Review of Industrial Organization*, and *The Encyclopedia of Statistical Sciences*. I have served as a referee for these journals (and others) and the National Science Foundation, as an Associate Editor of the *Journal of Econometrics*, and as a commentator on the PBS Nightly News Hour. I have participated in telecommunications regulatory proceedings before state public service commissions, federal and state courts and legislatures, the Federal Communications Commission, the Department of Justice and the Canadian Radio-Television and Telecommunications Commission concerning competition, price cap regulation, productivity, access charge reform, telecommunications mergers, local telephone company entry into interLATA markets and pricing for economic efficiency. I was recently appointed by COFETEL and Telmex as the outside arbitrator in the renewal of the Telmex price cap plan.

2. In its *Notice of Inquiry*,¹ the Commission addresses the audits of seven Regional Bell Holding Companies' ("RHCs") hard-wired central office equipment conducted by Common Carrier Bureau ("Bureau") staff. In general, the audit reports claimed that certain pieces of equipment in a sample from the Companies' Continuing Property Records ("CPRs") could not be located by physical inspection, and the Bureau staff extrapolated from this sample to derive an estimate of the total value of equipment deemed missing. Without passing judgement on the

¹ *In the Matters of Ameritech Corporation Telephone Operating Companies' Continuing Property Records Audit, Bell Atlantic (North) Telephone Companies' Continuing Property Records Audit, Bell Atlantic (South) Telephone Companies' Continuing Property Records Audit, BellSouth Telecommunications' Continuing Property Records Audit, Pacific Bell and Nevada Bell Telephone Companies' Continuing Property Records Audit, Southwestern Bell Telephone Companies' Continuing Property Records Audit, US West Telephone Companies' Continuing Property Records Audit, Notice of Inquiry*, released April 7, 1999, ("CPR Notice").

accuracy of the Bureau's findings, the CPR Notice asked for comments on the validity of the Bureau's methods and conclusions and on the effects of the alleged discrepancies on consumers and suppliers. I was asked by the United States Telephone Association ("USTA") to review Issue 8 in the CPR Notice from the perspective of an economist. Issue 8 addresses the possibility of a link between CPR discrepancies and access prices charged by these price-cap-regulated companies, asking

[w]hat ratepayer impact, if any, the alleged discrepancies in the CPR may have had, *e.g.*, through the derivation of the Commission's price cap rates, including re-initialization of price caps, sharing, lower formula adjustments, exogenous cost calculations, and changes to or setting of the productivity factors, joint cost allocations, separations, access charges, and ultimately ratemaking.

II. SUMMARY AND CONCLUSIONS

3. As explained below, the direct effect of any errors in the CPRs of these companies on consumer prices is nil. Under the Commission's price cap regulatory plan, annual changes in regulated prices are determined by a formula that is independent of accounting costs. Price cap regulation has effectively severed the direct link between regulated costs and prices, so that any changes in accounting costs associated with correcting alleged discrepancies in the CPRs would have no direct impact on prices. The CPR Notice, however, asks whether an indirect link between CPR discrepancies and prices could come about somehow through those vestiges of cost-based rate-of-return regulation—itemized in Issue 8 above—that still cling like barnacles to the Commission's price cap plan.²

4. That indirect link does not exist. Even under traditional rate of return regulation, rates were based on regulated accounting costs compiled in the company's Uniform System of Accounts ("USOA"), not on the CPR. The CPR audit does not purport to question the data or methods in the companies' *financial* books. Retiring an asset after discovering that it is missing does not

² For example, an error in Part 69 accounting costs in 1990 could—in theory—affect the initial level of the price cap index and, despite two subsequent reviews of the performance of the plan, it is possible that a trace of the original error persists or that the reviews were tainted by more recent errors in Part 69 costs.

change the rate base in the USOA and has little or no effect on depreciation expenses. Thus ratepayers have not paid more (or less) for the services they have received because a small number of asset retirements were allegedly not reflected accurately in the CPR.

III. THE ALLEGED DISCREPANCIES

5. The CPR audit alleges only that property is not properly tracked and thus implies that the property is no longer used and useful in the supply of telephone services. It does not claim that the investment amounts recorded as original costs in the CPR or in the companies' FCC regulated books of account—the Uniform System of Accounts or USOA—are incorrect. Thus, the correct assumption is that the assets alleged to be missing have merely been removed from service. The correct accounting treatment of these events would then be to retire the assets from the plant accounts. The Commission's Part 32 accounting rules require that

[w]hen any item of property subject to plant retirement accounting is worn out, lost, sold, destroyed...is withdrawn or for any other reason is retired from service, the plant accounts applicable to that item shall be credited with the original cost of the plant retired whether replaced or not...[Part 32.2000(d)]

and

For items included on the retirement units list, the original cost of any such items retired shall be credited to the plant account and charged to Account 3100, Accumulated Depreciation, whether or not replaced [Part 32.2000(d)(i)]

When the Reports of the Audit speak of writing off the company's plant accounts the amounts associated with equipment that could not be found in the audit,³ they must therefore mean accounting for the missing plant by ordinary retirements.⁴ Thus, assuming the plant alleged to

³ See, e.g., Report of the Audit of the Continuing Property Records of BellSouth Telecommunications, Inc., as of July 31, 1997, at ¶37.

⁴ Treating the proposed write-off as an extraordinary retirement would conflict with the Commission's rules and would make no economic sense. First, the audit does not claim to identify extraordinary retirements. According to 47 CFR 32.2000(g)(4), an extraordinary retirement cannot have been considered in setting past depreciation rates, would unduly deplete the depreciation reserve for the account and would be unlikely to recur in the future. As discussed below, the fact that the alleged missing plant is a small fraction of plant in service (continued...)

be missing by the audit to be truly “lost,” the correct accounting response is to retire it from service. The policy questions in Issue 8 then simplify to determining the effect, if any, of recognizing a delayed retirement of an asset on prices paid by ratepayers.

6. Under traditional rate of return regulation, it is the financial accounts in the USOA that are used for ratemaking purposes, and it is entries in these accounts from which virtually all regulatory costs are calculated, including separated costs, Part 69 costs to set access charges, joint cost allocations in TELRIC calculations, rates of return for lower adjustments and sharing, and exogenous cost calculations. Only to the extent that a change in the CPR affects the USOA ledger balances will a recognition of allegedly missing assets on the CPR affect prices that customers would have paid under rate of return regulation. We now turn to that relationship.

IV. THE RELATIONSHIP BETWEEN THE CPR AND USOA COSTS.

7. Assume that a particular asset of given category and vintage is discovered in the CPR audit to be missing. We infer from this discovery that the asset should have been retired at some unknown point in time between the day after which it was placed in service and the date of the audit. If we retire that asset today, what errors have been made, and how are regulated costs different from what they would have been had the asset been retired on the CPR books on the day it went out of service?

A. Revenue Requirements.

8. The CPR are the sources of primary information regarding plant retirements. The CPR only affects the company's accounting records through its use as a retirement source. Thus, to the

(...continued)

means that, for the RBOCs in question, depreciation reserves would not be unduly depleted by retiring the allegedly missing plant. In addition, the Staff's reports generally allege a longstanding problem in maintaining basic property records which implies that the delayed retirements are not one-time events and are accounted for in the setting of past depreciation rates. Treating the proposed write-off as an extraordinary retirement makes no economic sense because such treatment could result in the inability of the RBOC to recover some portion of its investment in an asset even though the audit provides no evidence whatever regarding the prudence of that original investment.

extent regulators rely on historical retirements in setting forward-looking lives, the CPR may also impact regulatory depreciation.

9. As discussed above, under Part 32 accounting, if plant were determined to be missing, the correct accounting procedure would be to retire the plant in the CPR and reflect that retirement in the USOA by crediting the appropriate Part 32 plant accounts and debiting the accumulated depreciation account. These actions should have taken place at some earlier date. For the delay in the recognition of the retirement—i.e., the omission and later correction—to affect consumers, it must affect prices. Under traditional cost-based rate of return regulation or under imperfect price cap regulation containing vestiges of rate of return regulation, the link between book USOA costs and prices is the revenue requirement which determines the amount by which regulated revenue must rise or fall. to meet the constraint that the firm recover its costs including its cost of capital. A firm's revenue requirement is given by the sum of its operating expenses, depreciation, taxes and return:

$$\begin{aligned}\text{Revenue Requirement} = & [\text{operating expense}] + [\text{depreciation expense}] \\ & + [\text{current and deferred income taxes}] \\ & + [\text{rate base}] \times [\text{allowed rate of return}]\end{aligned}$$

In theory, changes to a company's CPR could affect the revenue requirement directly through depreciation expense and return and indirectly through the tax component which depends upon depreciation expense and return. The affects of a delayed retirement on the revenue requirement are very different for depreciation and return and must be examined separately. However, as discussed below, they have no impact on the revenue requirement.

1. Return

10. There is no effect of retiring an asset on the return component of the revenue requirement. Return is calculated as the product of the allowed cost of capital and the rate base, and retiring an asset has no effect on net plant which defines the rate base. The reduction in telephone plant in service is just offset by an equal decrease in accumulated depreciation. For example,

	<i>INITIAL</i>	<i>AFTER \$100 RETIREMENT</i>
Asset Base	\$800 million	\$700 million
Reserve Level	\$500 million	\$400 million
Rate Base	\$300 million	\$300 million

Net plant is unchanged when telecommunications plant in service and accumulated depreciation are both reduced by the amount of the plant retired.

2. Depreciation

11. In theory, under the FCC's remaining life depreciation methodology, there is no effect of a retirement on depreciation expense, though the fact that depreciation rates are not recalculated each year means that transitory effects of retirements can occur. Remaining life depreciation is self-correcting, automatically adjusting for retirements so that the total value of the asset is depreciated only once. Depreciation expense is calculated as

$$\text{Depreciation expense} = [\text{asset base}] \times [\text{allowed depreciation rate}]$$

where the allowed depreciation rate is given by the ratio of (i) the proportion of plant that remains to be depreciated and (ii) the regulatorily-prescribed average remaining life of the assets. For example, the proportion of undepreciated plant in the previous example is $0.3750 = [800-500]/800$. Assuming the average remaining life is 10 years, the allowed depreciation rate in the previous example is about 4 percent ($0.3750/10 = 0.0375$). Annual depreciation expense would be \$30 million ($= 800 \times 0.0375$). After the \$100 million retirement, the asset base and depreciation reserve would fall to \$700 million and \$400 million respectively, so that the allowed depreciation rate would rise to $0.04286 (= 300/700/10)$. The annual depreciation expense associated with the new case would be the same \$30 million ($= 700 \times 0.04286$). In principle, then, there is no direct link between the retirement of an asset and the company's annual depreciation expense.

12. In practice, there are two differences. First, prescribed depreciation rates are not changed instantaneously, though they can be updated annually through an FCC Technical Update filing. Second, the relationship between retirements—particularly delayed retirements—and prescribed lives used to calculate depreciation expense is far from direct. Actual retirement experience is only one of several elements used in regulatory studies to determine prescribed lives. The FCC's regulatory lives purport to be forward-looking, taking into account future changes in technology and markets that impact the economic lives of the assets. However, regulators have frequently used prescribed lives to accomplish other regulatory goals rather than merely reflecting current beliefs regarding actual economic lives. For that reason, the Companies in question all maintain separate depreciation accounting records for financial reporting, which must report accurate views of depreciation to stockholders.

13. If there were no effect of a delayed retirement on allowed lives, the only link between a delayed retirement and a revenue requirement would be the transient effect of a delayed retirement on the regulated depreciation rate. Suppose, however, allowed lives were based entirely on experience. The accounting response to the determination in an audit that an asset is missing is to retire the asset today even though we know that it actually went out of service in sometime in the past. Thus, one might think such accounting would necessarily overstate average life. One would be wrong. The effect of a delayed retirement on prescribed lives in the FCC's group depreciation method is ambiguous, as I explain below.

14. One effect of a delayed retirement occurs because the actual life of a missing asset is unknown but is overestimated in the corrected CPR: i.e., the asset went out of service at some unknown time in the past and the corrected CPR assumes that time is today. A second, possibly offsetting, effect stems from the removal of the asset from the CPR coupled with the asset group accounting used by the FCC. When an asset is retired from a vintage in the age distribution and the remaining life of the vintage is greater than the average remaining life of the category prior to the adjustment, average composite remaining life of the plant category will decrease. In theory, nothing can be said about the sum of these two effects: i.e., on the size and direction of a change in the average remaining life of a plant category when corrections are

made for omitted retirements and the actual retirement dates are unknown. In the current case, the asset groups and vintages of plant alleged to be missing are known, but that information is not available, even in principle, for the plant estimated to be missing by extrapolation from the audit sample. It is thus impossible to determine the effect of a delayed retirement on historical asset lives. However, because remaining lives are prescribed for groups of assets, it follows that when omitted retirements are small relative to undepreciated plant or when retirements are distributed uniformly across all vintages of equipment, there will be little change in the remaining life of a plant category when delayed retirements are corrected.

B. Conclusions

15. The only link between the CPR and the USOA is the processing of retirements. As such, where property listed on the CPR is determined to have been removed from service, the assets should be retired from the CPR. The discrepancy in the CPR is then one of timing; retirements for some assets have been delayed by an unknown amount. In turn, the timing of a retirement has no effect whatever on the return component of the revenue requirement in the period when the asset went out of service, the current period when it is retired, or any period in between. The reduction in telephone plant in service from a retirement is just offset by an equal decrease in accumulated depreciation, so that the rate base remains unchanged. Similarly, timing of retirements has no effect on depreciation expense. In theory, remaining life depreciation is self-correcting, but, in practice, depreciation rates are not recalculated instantly, and retirements can affect the allowed average remaining lives of the assets. However, the direction of these effects on depreciation expense cannot be calculated and the magnitude of the effects is small because the assets to be retired are a small fraction of plant in service.

16. In conclusion, even if the audit were correct, the delayed retirements would have no effect on current revenue requirements, and the retirements that did not take place in previous periods would have had no effect on revenue requirements in those periods. The flow of revenue requirements would have been unchanged if the Companies had retired the assets from their CPRs in the years during which they were removed from service.

V. PRICE CAP EFFECTS.

17. Interstate prices today are largely unrelated to the size of the capital stock or to accounting costs as measured by the USOA. In general, price cap regulation “severs the direct link between regulated costs and prices,”⁵ in the sense that annual price changes are determined by a formula that does not depend on accounting costs. As a policy matter, the Commission has found that severing the link between accounting costs and prices is necessary to accommodate competition:

reducing our regulatory reliance on earnings calculations based on accounting data is essential to the transition to a competitive marketplace, where forward-looking costs are central to decisionmaking.⁶

Thus, in principle, changes in accounting costs do not affect prices under the FCC’s price cap plan. Despite this principle, the CPR Notice identifies several potential exceptions—the initial level of prices, reinitialization of the price cap index, sharing, the lower formula adjustment, exogenous cost calculations, determination of the productivity factor, calculation of factors used to allocate joint costs to different services, jurisdictional separations calculations and the setting of access charges—and effectively asks a two-part question: Is it possible that delayed retirements can somehow affect accounting costs at some point in time, and, if so, can those changes in accounting costs affect prices and consumers through one of these vestigial rate-of-return mechanisms?

18. However, the previous section concluded that there is (and was) no effect of delayed retirements on the companies’ revenue requirements. Thus, correcting the delayed retirements has no effect on most of the price cap exceptions because they depend entirely on accounting costs as summarized in the revenue requirement. Earnings sharing (used in the past in

⁵ *In the Matter of Computer III Remand Proceedings: Bell Operating Company Safeguards and Tier 1 Local Exchange Company Safeguards*, CC Docket No. 90-623, Report and Order (1991) 6 FCC Rcd 7571, 7630 at 7596.

⁶ *In the Matter of Price Cap Performance Review for Local Exchange Carriers and Access Charge Reform*, CC Docket Nos. 94-1, 96-262, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, released May 21, 1997, (“Fourth Report and Order”) at ¶150.

exchange for a lower productivity offset) and the lower formula adjustment depend on the company's accounting rate of return on interstate assets.⁷ Because changes in retirements have no material effect on revenue requirements, the company's past and present use of the sharing and lower formula adjustment would be unaffected by retirement delays in its CPR. Similarly, regulatory accounting calculations used to allocate joint costs across services, jurisdictions and Part 69 elements make no use of the companies' CPR. The fact that delayed retirements do not affect depreciation expense or the rate base implies that these factors and calculations would have given the same results if the missing assets had been retired in a timely fashion.

19. The results of the audit also have nothing to say about conditions in 1990 and cannot be used retroactively to formulate new estimates of costs in 1990 when the price cap index was initialized. The Commission determined that interstate access prices in effect on July 1, 1990 were a just and reasonable level at which to initialize the price cap plan, and it came to that conclusion without undertaking a traditional rate case.⁸ Even if the audit were to cast doubt on the quality of the RBOCs' CPRs in 1990—which it does not even address—we have shown above that correcting the CPR, even back to 1990, would have no effect on the revenue requirement in 1990. Thus, prices in July 1990—and the initial level of the price cap index—would have been unchanged if the Company had corrected hypothetical delayed retirements. Moreover, the price cap index for each Company has been subjected to many changes since July, 1990, and even if one could determine that the initial revenue requirements in 1990 were biased in some direction, it does not follow that a simple change to the current price cap index will offset the bias.⁹

⁷ "The sharing obligation is triggered when a price cap carrier reports interstate earnings above a specified level. Reported earnings are calculated on the portion of embedded investment and expenses that are allocated to the interstate jurisdiction by Part 36, the jurisdictional separations manual. Interstate rate base and expense levels, and thus reported earnings, are also directly affected by accounting depreciation rates, which we prescribe for most incumbent price cap LECs," Fourth Report and Order at ¶152.

⁸ See, *In the Matter of Policy and Rules Concerning Rates for Dominant Carriers*, Memorandum Opinion and Order on Reconsideration, CC Docket No. 87-8313, released February 8, 1991 at ¶¶102-103.

⁹ For example, the PCIs of companies whose earnings triggered the sharing formula were decreased for a year to implement sharing and then (all else equal) increased back. If the initial price cap index were set in error, (continued...)

20. Similarly, efforts to “reinitialize”¹⁰ the price cap index are unaffected by the audit. Intervenor argue that high accounting rates of return for the ILECs signal a failure in the price cap plan, and they propose to adjust the price cap index to reduce those accounting earnings. Irrespective of the merits of the argument, the fact that delayed retirements have no effect on accounting earnings means that if the price cap index had been reinitialized in the past or might be reinitialized in the future, the delayed retirements allegedly identified in the audit would have no effect on the decision to reinitialize the price cap index or the level to which it would be reset.

21. Exogenous costs are costs stemming from events beyond the control of the regulated firm, such as changes in regulatory or accounting rules or tax rates. If an event is found to be exogenous, the Company calculates the difference between the effect of the event on Company costs and on the costs of an average U.S. firm and expresses that difference as a percentage of its total revenue in the base period. That percentage is one component of the annual percentage adjustment in the price cap index: in general, the price cap index increases annually at a rate of inflation less the productivity offset plus the change in exogenous costs. At the most basic level, changes in the Company’s CPR have no effect on accounting costs and thus no effect on the calculation of the exogenous cost percentage. Beyond that level, exogenous cost changes to reflect changes in accounting rules are measured using an economic cost rather than an accounting cost concept,¹¹ so that for this type of exogenous cost adjustment, changes in accounting costs would have no effect on the exogenous cost calculation. Moreover, the exogenous cost adjustment represents the difference in costs caused by the exogenous event, and changes in the level of accounting costs would not necessarily affect the difference in costs

(...continued)

sharing and lower formula adjustments would have been made in error, and a simple proportional adjustment to the current price cap index would not fully correct for the original error.

¹⁰ A horrible word. How can something be initialized twice?

¹¹ In the Matter of Price Cap Performance Review for Local Exchange Carriers, First Report and Order, CC Docket No. 94-1, released April 7, 1995 at ¶293.

before and after the exogenous event. Finally, the denominator in the exogenous cost calculation is base period revenue which is unaffected by errors in accounting cost.

22. Similarly, the past and current calculations of the value of the productivity offset are unaffected by changes to the CPR. Past values of **X** were based on the historical change in prices; the Commission combined long-term calculations of real price changes in telecommunications with short-term calculations based on the changes in access prices.

In the original and the interim price cap plans, the baseline X-Factor was based on the average of the short-term and long-term trends in rate reductions prior to our adoption of the original price cap plan in 1990, plus a consumer productivity dividend (CPD) of 0.5 percent.¹²

The long-term real rates of growth of telecommunications prices are obviously unaffected by alleged discrepancies in local telephone companies' CPR. These studies cover the 1929-1989 period and are based on the Bureau of Labor Statistic's compilations of industry-wide pricing data.¹³ Plant determined to be missing in an audit in 1998 has obviously had no effect on the growth of prices between 1929 and 1989. The short-term price studies also predate the 1998 audit by nearly ten years. Moreover, even if the type of errors allegedly uncovered in the audit occurred in the past, such errors would have no systematic effect on the growth of telephone prices relative to inflation. First, the errors would have no effect on revenue requirements and thus no effect on prices under any regulatory regime. Second, even if there were an effect on prices, an error of the type alleged in the 1998 audit which persisted year after year would have no effect on the annual change in prices.

23. In the latest revision of the price cap plan, the Commission adopted a method of calculating **X** based on total factor productivity growth for the regulated local exchange industry:

¹² Fourth Report and Order, at ¶8.

¹³ *In the Matter of Policy and Rules Concerning Rates for Dominant Carriers*, Supplemental Notice of Proposed Rulemaking, CC Docket No. 87-313, released March 8, 1990, Appendix D, Thomas C. Spavins and James M. Lande, "Total Telephone Productivity in the Pre and Post-Divestiture Periods," at 154.

In the LEC Price Cap Performance Review, we tentatively concluded that an analysis that directly measured the growth of LEC productivity and input prices would provide a better basis for prescribing an X-Factor. In the Price Cap Fourth Further Notice, we invited comment on the total factor productivity (TFP) methodology and other alternatives for calculating the X-Factor. We also tentatively concluded that we should base our X-Factor on a TFP-based measure of productivity and an input price differential. We find below that the record supports prescribing a single X-Factor of 6.5 percent, based on our conclusions regarding a reasonable method of calculating LEC TFP and input prices, our findings regarding the input price differential, and our decision to retain the 0.5 percent CPD.¹⁴

Total factor productivity for an industry is calculated by combining accounting measures of inputs and outputs for all of the firms in the industry and measuring the difference in the rates of growth of aggregate output and aggregate inputs.

24. Measured TFP growth for the firm is unaffected by changes in the CPR. First, errors in the timing of retirements have no effect on the capital stock of the company and thus no effect on its rate of growth. Therefore, the rate of growth of inputs is unaffected by delays in retirements. Second, while changes in depreciation rates can affect the growth in the capital stock and measured TFP growth, it can be shown that moderate differences in depreciation rates produce values for TFP growth that do not differ significantly.¹⁵ Again, the key element is whether depreciation rates remain constant over the period. Since TFP growth depends on the growth rate of inputs, as long as depreciation rates remain constant over time, it does not matter much whether they are constant at a high or low level.

VI. CONCLUSIONS

25. No harm, no foul. Even if the conclusions of the audit were correct—that some small percentage of LEC assets in the CPR cannot be located—ratepayers would have suffered no

¹⁴ Fourth Report and Order at ¶8.

¹⁵ See Attachment B to the Comments of the United States Telephone Association in CC Docket No. 98-137, *In the Matter of The 1998 Biennial Regulatory Review-Review of Depreciation Requirements for Incumbent Local Exchange Carriers*, in which Professor Frank Gollup concludes that assumed depreciation rates have only a small effect on the value of measured TFP growth.

harm. The reasons are simple. First, a delay in retiring assets would have had no material effect on the accounting costs that would have been used to set rates under traditional cost-based rate of return regulation. Had the assets been retired on the day they left service, the revenue requirements that would have determined rates would be unchanged. Second, accounting costs are no longer used to set prices under the Commission's price cap regulation plan, so even if delay in retiring assets did affect revenue requirements, changes in revenue requirements would have no direct effect on consumer prices because of price cap regulation. There is also no indirect effect. The vestiges of cost-based, rate of return regulation identified in Issue 8 are unchanged by a delay in retirements and thus would have no material effect on prices. The RBOCs' alleged delay in retiring assets did not cause customers to pay more or less than they would have paid had the assets had been properly retired on the CPR.